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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,974	03/31/2004	Masanori Kadotani	520.42565CX1	5958

20457 7590 01/17/2006

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EXAMINER

ARANCIBIA, MAUREEN GRAMAGLIA

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 01/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/812,974	KADOTANI ET AL.	
	Examiner	Art Unit	
	Maureen G. Arancibia	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claims 27-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Specifically, the recitation in independent Claims 27 and 28 of "generating a plasma including organic polymer" does not make clear whether the organic polymer is supplied as a process gas or is etched off of the substrate to be processed. The only mention of organic polymer in the original disclosure seems to be the mention in the "Background of the Invention" of organic polymer to be etched from the substrate. (Specification, Page 1, Lines 20-22) The recitation in the claims of the plasma including organic polymer has been interpreted in accordance with the Specification to refer to organic polymer included in the plasma by virtue of being etched from the substrate being processed. However, clarification is requested. Should Applicant assert a different interpretation of this limitation, Applicant is requested to identify support in the original disclosure for such an interpretation. Also, Applicant is further requested to identify support in the original disclosure for the other subject matter claimed in new claims 27-38 or in any future amendments to the claims, so that the Examiner can fully evaluate the extent of support for said subject matter. See MPEP 2163.06. Claims 29-38 are rejected due to their dependence on Claims 27 and 28.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 27-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda (JP 9-17770-A) in view of Applicant's Admitted Prior Art (AAPA). The following rejection refers to the Machine-Assisted Translation (MAT; obtained from The Thomson Corporation; 2005) and Figures of Fukuda.

In regards to Claims 27 and 28, Fukuda teaches a plasma processing method for conducting a plurality of different processing on a film on a front side of a specimen W placed on a mount surface of a specimen table 21 disposed inside a processing chamber (Figure 3) using plasma generated therein, comprising:

adjusting an internal temperature of the specimen table formed of a heat conduction member so that a temperature in a central portion of the specimen table becomes higher than a temperature in an outer circumferential portion of the specimen table by a predetermined value (Paragraphs 19, 29);

generating a plasma by supplying a processing gas to the interior of the processing chamber and processing the film by applying a bias electric power 19 to the specimen table (Paragraph 29);

while, after the specimen is placed on the specimen table, supplying a heat conducting gas with a lower pressure to a space between the mount surface positioned above the central portion of the interior of the specimen table and a rear side of the specimen, and supplying a heat conducting gas with a higher pressure to a space

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between the mount surface positioned above the outer circumferential portion of the interior of the specimen table and a rear side of the specimen to adjust the heat conducting gas to a predetermined pressure difference in spaces of the central and outer circumferential portions of the rear side of the specimen (Paragraphs 19, 39);

and processing the film while adjusting said pressure difference to a value different from the predetermined pressure difference. (Paragraphs 34-38)

While Fukuda discloses the dual coolant system and its use and the dual heat conducting gas system and its use as different embodiments, **Fukuda also expressly teaches that the embodiments are used together.** (Paragraph 16; *In this case, the supply system of a refrigerant and/or a warming medium **may be plural**. However, it is good **even when it is single**.*) Moreover, one of ordinary skill in the art would have been further motivated to combine the teachings of Fukuda to combine the fine control over the surface temperature of the wafer provided by each embodiment (Paragraphs 32, 38) to obtain even better control over the surface temperature of the wafer, thereby obtaining a precise and repeatable etching process (Paragraph 41). In other words, one of ordinary skill in the art would expect that since each embodiment of Fukuda attempts such temperature control, using the two embodiments together would produce even better control. Lower temperature and higher heat conductance at the periphery would work together to accomplish the same goal of offsetting the excess radiant heating at the periphery. (Paragraphs 29 and 38)

Fukuda also teaches that the temperature of the specimen table is adjusted by adjusting the temperature of coolants passing through passages 14, 11 disposed at a

central portion and an outer circumferential portion of the specimen table. (Paragraphs 26-29)

Fukuda does not expressly teach that the method is repeated for a second film with different process settings, or that the plasma includes organic polymer.

AAPA teaches plasma processing wherein the plasma includes organic polymer (Page 1, Lines 20-22; the organic polymer protective layer will inherently etch at least in part, thereby providing organic polymer to the plasma); and wherein multiple films are processed with different process settings. (Page 5, Lines 1-8)

It would have been obvious to one of ordinary skill in the art to modify the method taught by Fukuda to have the plasma include organic polymer and to process multiple films with different process settings. The motivation for having the plasma include organic polymer, as taught by AAPA (Page 1, Lines 20-22), would have been to have a sidewall protective film. This film would inherently be etched to some degree in the plasma, thus supplying organic polymer to the plasma. The motivation for processing multiple films with different process settings, as taught by AAPA (Page 5, Lines 1-8), would have been to fully process a specimen, with each layer being etched into an identical shape.

5. Claims 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda in view of AAPA as applied to claims 27-31 above, and further in view of Lue et al. (US Patent No. 5,761,023).

The teachings of Fukuda and AAPA et al. were discussed above.

The combination of Fukuda and AAPA does not expressly teach that at least one of the pressure of the heat conductive gas, the difference in pressure thereof, and the temperatures or temperature difference of the specimen table are adjusted on the basis of information obtained in advance before the processing of the substrate is started.

Lue et al. teaches that the difference in pressure of a heat conductive gas in two regions is adjusted by a controller 39 on the basis of information (a temperature setpoint) obtained in advance before the processing of a substrate is started. (Column 9, Line 64 - Column 12, Line 22)

It would have been obvious to one of ordinary skill in the art to modify the combination of Fukuda and AAPA to adjust at least one of the pressure of the heat conductive gas, the difference in pressure thereof, and the temperatures of the specimen table on the basis of information obtained in advance before the processing of the substrate is started. The motivation for doing so, as taught by Lue et al. (Column 9, Line 64 - Column 10, Line 4), would have been to enable a feedback loop to be implemented to control at least one of said variables to a desired value.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 27-38 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 8-11, 14-18, and 21 of copending Application No. 10/372,831 ('831) in view of AAPA and Lue et al.

The method claimed in the instant application is an obvious way of using the apparatus recited in Claims 8-11, 14-18, and 21 of '831. The recitations of in the instant application of using the apparatus to process a plurality of films with different process settings, and using set-point data obtained in advance of the processing are taught by AAPA and Lue et al., as discussed above. It would have been obvious to one of ordinary skill in the art to employ the teachings of AAPA and Lue et al. in using the apparatus recited in the claims of '831 for the reasons set forth above.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

8. Applicant's arguments filed 31 October 2005 have been fully considered but, to the extent to which they still apply, they are not persuasive.

a. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a non-uniform temperature distribution on the specimen; a faster response time than attained by the prior art) are not recited in the rejected

claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In this case, the claims merely require control of the temperature of the *specimen table* or the pressure of the heat-conducting gas.

b. In response to applicant's arguments against the references (especially Lue et al.) individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

c. Applicant's arguments against Fukuda have been considered, but are believed to have been addressed in the rejection set forth above, particularly in view of the Machine-Assisted Translation (MAT) obtained from The Thomson Corporation.

d. It is also believed that the reasoning set forth in the obviousness-type double patenting rejection above meets the Examiner's burden to adequately support the rejection.

Conclusion


9. Applicant's amendment necessitated any new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen G. Arancibia whose telephone number is (571) 272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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